REVIEW

A comprehensive framework for phygital tourism experiences: bridging academic insights and industry practices across sectors

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Abstract

This study seeks to provide both researchers and industry practitioners with a more refined understanding of phygital tourism experiences by introducing a new, integrated conceptual framework, drawing on insights from multiple sectors. Using a narrative review guided by PRISMA methodology and a content analysis of 84 practical-phygital examples across 11 industries, including tourism, luxury fashion, and retail, the research identifies key gaps in the current theoretical understanding and practical applications of phygital experiences. A total of 57 academic articles were analysed, leading to the identification of four central themes in the existing literature: defining phygital, customer responses, the technological components of phygital experiences, and phygital strategies. Based on these findings, the study proposes a novel integrated framework for phygital experiences and offers a future research agenda. The study also highlights important gaps between academic research and industry practices, particularly regarding accessibility, employee perspectives, and the perceptions of older generations. This comprehensive critique goes beyond current insights, presenting a holistic perspective that addresses both the theoretical foundations and practical elements of phygital experiences while encouraging tourism and hospitality providers to adopt cross-sectoral lessons for successful implementation.

Keywords New experience framework · Phygital experiences · PRISMA · Academia-industry gap · Content analysis · Research agenda

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1 Introduction

The application of next-generation technological solutions, such as Augmented Reality (AR), virtual models and Artificial Intelligence (AI), is posing changes in the way tourism organisations operate in response to evolving visitor expectations for interactivity and immersion (Flavián et al. 2019). Such technological advancements are increasingly fading the boundaries between physical and digital, bringing new opportunities for tourism to integrate digital tools into physical spaces by exploiting the advantages of both to enhance human-technology interplay (Corrigan-Kavanagh et al. 2023). Consequently, a new set of "phygital" (physical + digital) experiences are emerging that are neither entirely physical nor digital but exists as a fusion of both worlds (Batat 2022).

In the academic literature, the concept of a digital world interacting with the physical world has been explored in retail (Hyun et al. 2022), cultural heritage (Andrade and Dias 2020), and tourism (Liu et al. 2022), employing terms like "hybrid" and "phygital" to describe the phenomenon. Accordingly, phygital experiences hold particular promise for service sectors like tourism due to their potential to facilitate meaningful and immersive in-person experiences without missing the benefits of technology (Batat 2022). Phygital tourism is an emerging area of study, with recent research suggesting that the integration of physical and digital elements can create personalised and memorable experiences that foster emotional connections with visitors (Çiftçi and Çizel 2024). Significantly, phygital experiences are characterised by the multiplicity of consumer engagement methods (Hyun et al. 2022), including but not limited to gesture recognition, augmented audio or smart mirrors.

Despite its practical application, from a theoretical standpoint, the phygital construct in the tourism industry remains insufficiently understood and mostly vague, requiring a more comprehensive academic conceptualisation (Batat 2022). Indeed, the phygital concept remains relatively unexplored, with only a small body of work addressing it directly in cultural heritage (Çiftçi and Çizel 2024), smart tourism (Ballina et al. 2019), tourism information search (Neuburger et al. 2018) and tourism geography (Mieli et al. 2024). Del Vecchio's et al. (2023) work presents the first efforts at critically reviewing existing phygital literature across five areas: "marketing and consumer behaviour", "cultural heritage", "tourism and urban development", "education and learning", "social issue and politics", "technical and legal issues". These interconnected areas showcase the ways different phygital environments lead to innovative consumer experiences across industries. However, the examination lacks an in-depth critique of theoretical foundations and a clear link to how phygital contributes to experience design. Using the antecedents, decisions and outcomes (ADO) framework, Mele et al. (2023) identified four main aspects of the phygital term: the objects (i.e. hardware requirements) and applications, the context within which the experience is delivered (e.g. the social and cultural context), and the customer journey. While this review offers a critical appraisal of existing theoretical frameworks and phygital experiences across sectors, our understanding of how these experiences function and are best designed within the service industry, such as tourism and hospitality, has yet to be explored. More recently, Stankov et al. (2025) examined the implications of AI-powered smartphones for phygital tourism experi-

ences. Yet, their AI-centric perspective allows for broader conceptualisation of phygital tourism across varying technologies and contexts.

Therefore, this study seeks to offer a more in-depth critique of the theoretical underpinnings of the phygital construct. By expanding the discussion around user interaction, design, and technology integration, we aim to further advance the academic conceptualisation of phygital experiences and their potential in the tourism industry. To address this gap, our paper first performed a narrative systematic review of research explicitly focused on phygital experiences, evaluating the evolution of the literature. Second, the paper conducted a content analysis of existing practical-phygital examples to acknowledge the lag in academia compared to the dynamic advancements in various industries. We draw insights from multiple sectors to provide context and inspire new implementation ideas. Specifically, the following research questions are addressed.

RQ1: How can previous research and practical phygital examples be classified and understood to inform a common framework of phygital experiences?

RQ2: How do individuals interact within a phygital tourism experience space?

RQ3: How does the physical component of the phygital experience compare to the digital component?

This paper seeks to consolidate the existing conceptualisation of phygital, addressing both consensus and contradictions while critiquing emerging trends and bridging gaps between theory and practice. By combining theoretical and empirical information, this paper is the first to provide a rich critique of the theoretical foundations, going beyond insights into phygital experience practices, allowing to reveal the potential of phygital tourism applications. To summarise the insights for tourism providers, we propose a new, integrated framework for phygital experiences, making the first effort to offer a more holistic perspective by representing key elements for designing phygital experiences. To provide a more comprehensive conceptual foundation, the following section further defines the notion of phygital and presents illustrative examples, thereby contextualising its relevance to the study's focus on visitor experience.

2 Background

Coined by the Australian marketing agency Momentum in 2013 (Belghiti et al. 2017), the term "phygital" broadly refers to the blending of physical and digital elements to create novel experiences (Mieli 2022). Although the word phygital is used by business journalists, the term did not appear in academia until very recently, and it is now growing in popularity, particularly in marketing and retail research (Banik 2021). Batat (2022) distinguishes physical, digital and phygital experiences by defining phygital as the third domain of customer experience. In detail, the physical experience is based on social interactions that foster emotional connections and a sense of

belonging, whereas digital experiences focus on technological affordance, customisation and monitoring. In contrast, the phygital experience integrates these realms by delivering both emotional and functional values.

To deepen the understanding of phygital tourism experience, Table 1 positions phygtial alongside the adjacent constructs of technology-enhanced tourism, hybrid and metaverse tourism experiences. This classification is informed by previous studies (see Koo et al. 2023; Mieli 2023; Neuhofer et al. 2014; Piccioni 2023) to highlight commonalities and differences. While each construct employs technology to enhance tourism experiences, they differ in the locus of the experience (i.e., physical, virtual or blended), the design purpose and degree of immersion. As such, the table shows conceptual overlaps between the concepts yet highlights phygital tourism experience as distinctive through its holistic and human-centred integration of physical and digital touchpoints.

Building on the conceptual definition of phygital, Van Tichelen (2019) categorises phygital experiences into four distinct types relevant to tourism: 1) "informational" to provide additional information utilising technologies like object recognition tables and interactive screens; 2) "transactional" to streamline the buying process, exemplified by self-service check-out kiosks; 3) "entertaining" to engage individuals with interactive games using VR and smart mirrors; and 4) "supportive" to enhance onsite experiences to guide individuals. The four types span a wide spectrum of physical and technological solution combinations, demonstrating their versatility and imple-

Table 1 Comparison of technology-mediated tourism constructs

	Technology-Enhanced Tourism Experiences	Hybrid Tourism Experience	Metaverse Tourism Experience	Phygital Tourism Experience
Core Concept	Tourism enriched through digital tools to co-create experiential value	Combination of online and offline formats	Participation in fully immersive, persistent virtual environments	Holistic integration of physical and digital elements into one integrated experience
Role of Technology	Act as a source of innovation and co-creation of enhanced destination experience	Connect and coordinate parallel physical and digital touchpoints	Create fully virtual spaces enabling interaction with avatars and digital objects	Mediate and augments interactions with the physical world
Core Technology	Online booking systems, smartphones, mobile applications, social media	360° virtual tours, livestreaming platforms, QR codes	VR headset and platforms, 3D virtual worlds, blockchain, cryptocurrency, non-fungible token	AR, MR, VR, QR codes, digital scent technology, projection mapping, interactive displays
Design Purpose	Enhance value, interactivity and personalisation	Enable flexible transition between physical and digital modes	Create immersive, social, and interactive virtual worlds	Deliver hedonic and utilitarian value via human-centred integration of physical and digital components
Immersion	Limited immersion	Partial or format-dependent immersion	High immersion via virtual presence and avatar interactions	Multisensory immersion from blended physical and digital touchpoints

mentation potential. For instance, Deepscent is a startup offering digital olfactory solutions with real-time scent customisation by integrating AI and IoT with traditional fragrance products (2021). In the tourism and art sectors, sites like Pompeii offer walking tours with AR glasses, enabling tourists to admire the ruins before the volcanic eruption (AR Tour 2023) (See Fig. 1). By outlining the concept's definition, typologies, and practical applications, this background section further contextualises the term phygital and highlights its significance for tourism research and practice. The following section details the methodological approach employed.

3 Methods

3.1 Research design

This research employed a dual-method design to provide a more comprehensive understanding of phygital experiences by investigating the topic from two interrelated perspectives: academic theory and industry practice. Guided by the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines (Page et al. 2021), a narrative systematic review (Study 1) was conducted to map the current landscape of research. Building on Study 1, Study 2 performed a content analysis of practical phygital examples from diverse sectors to elucidate how phygital experiences are designed and implemented in various sectors. Drawing on insights from both studies, a comparison between findings was undertaken to develop the phygital experience framework by following Müller-Bloch and Kranz's (2015) guidelines. This integrated approach bridges theory and application by presenting a holistic framework while identifying knowledge gaps, alignment opportunities, and implications for future research and practice.

Fig. 1 Phygital experiences examples (authors' own 2023; AR Tour 2023)

3.2 Study 1 narrative systematic review

A systematic review was performed by following the PRISMA checklist to ensure a transparent process and offer a reference point for other scholars (Page et al. 2020). The search process took place in July 2023 to retrieve scholarly articles in Scopus, Web of Science (WoS) and IEEE Xplore. Our review includes peer-reviewed articles, book chapters and conference papers from different fields, including but not limited to tourism and hospitality, cultural heritage, retail, marketing and management. To capture the related literature, the query TITLE-ABS-KEY and the Boolean operator 'AND' were used, for instance, as follows: "phygital" AND "experiences", "phygital" AND "tourism", "phygital" AND "marketing", "phygital" AND "retail", "phygital" AND "heritage" and "phygital" AND "hospitality", "phygital" AND "events", and "phygital" AND "leisure". In this phase, it was purposefully decided only to include publications which employed the term "phygital" instead of "hybrid." This choice is underpinned by the perspective that "phygital" more accurately conveys the nuanced blend of physical and digital elements, aiming to stimulate a discussion in the evolving realm of combining physical and digital experiences. Finally, a set of criteria was established to filter the articles for inclusion/exclusion according to the research question - see Table 2 for details.

A data cleaning process was performed via an Excel spreadsheet containing bibliographic details, such as authors' names, titles, years of publication and journals. The initial search returned 226 articles published between 2014 and 2024, including 158 from Scopus, 57 from WoS and 11 from IEEE Xplore. Comparing the retrieved documents revealed many similarities, although Scopus generated more articles. After removing 22 duplicates using EndNote X9, 204 articles remained for the initial screening. The titles and abstracts of records were then screened independently, and all articles were manually checked to ensure their relevance, considering Table 2.

Thereafter, 133 articles were excluded for one of the following four reasons: irrelevant title and abstract (125 items), review papers (6 items), non-English (1 item) and viewpoint (1 item). This resulted in 71 eligible documents. Due to difficulties obtain-

Table 2 Inclusion and exclusion criteria for the systematic literature review	Inclusion criteria	Exclusion criteria
	Studies written in English.	Studies published in languages other than English.
	Studies published after 2013, when the term 'phygital' was established, reflect the significant technological changes of the last 10 years.	Studies that use the term phygital but are irrelevant to the scope of the study (e.g., pedagogy and archaeology).
	Studies that use the term phygital in the title and/or abstract.	Previous systematic literature reviews that mention the term phygital.
	Empirical and theoretical studies.	Studies written before 2013.
	Peer-reviewed articles, book chapters and conference papers.	Viewpoints articles.
	Studies in different disciplines on phygital experiences.	

ing the full text, 5 studies were excluded. Then, the researchers carefully screened the full text of 66 documents, and 9 studies were excluded as the content was considered incompatible with the purpose of the study. The PRISMA process resulted in 57 eligible studies (see Fig. 2). Due to methodological limitations, there might be a few relevant papers that were not captured during the search process. Following Braun and Clarke's (2012) approach, a thematic analysis in NVivo 11 was conducted to detect additional themes and provide a nuanced perspective on phygital experiences literature. This entailed carefully examining papers and generating thematic codes with identified primary and secondary codes in a codebook.
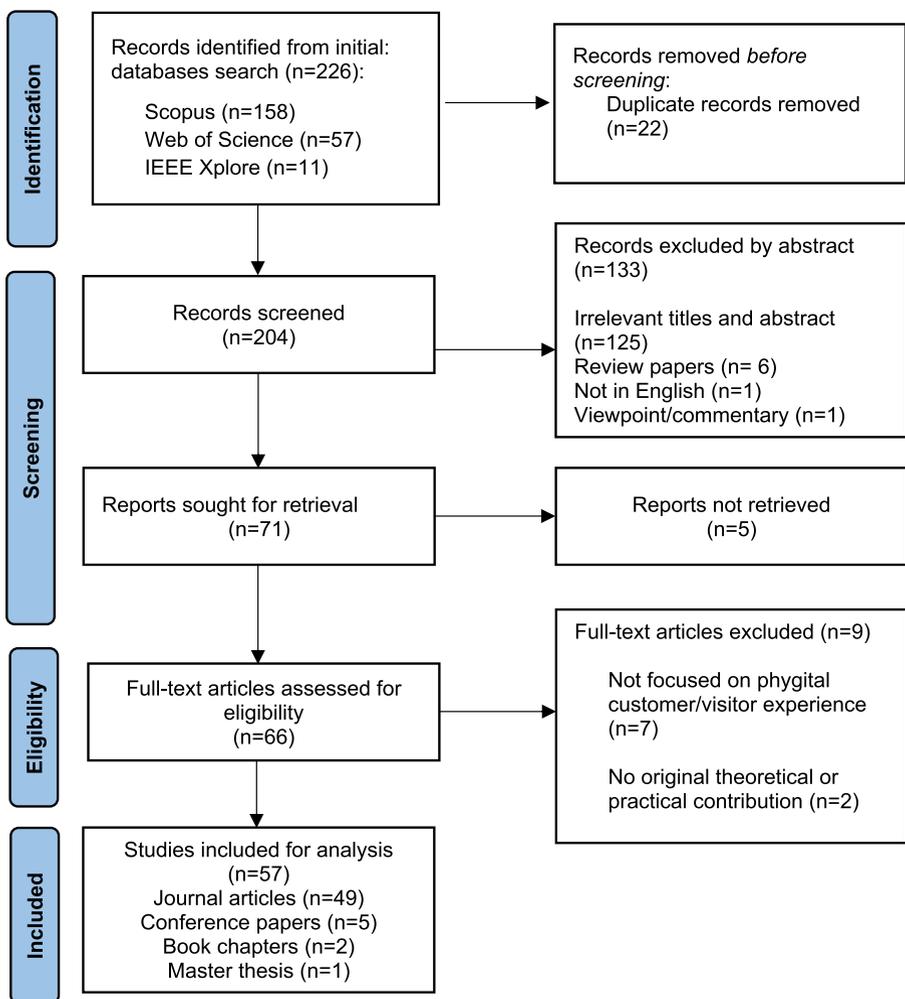

Fig. 2 PRISMA 2020 flowchart

3.3 Study 2: Examination of phygital industry examples

 To complement Study 1, Study 2 conducted a content analysis of practical-phygital examples from different industries. Content analysis was chosen as it involves organising data by coding it into different groups according to selected criteria, assisting researchers in extracting, organising, understanding, and capturing information about phygital experiences to generate insights into potential new design strategies (Krippendorff 2004). First, an online search was conducted using keywords such as "phygital tourism", "phygital experiences", and "phygital examples in retail/tourism/arts" to gauge an initial overview of the potential content classified as phygital, leading to sources such as e-news and videos. Subsequently, a snowball sampling approach was employed to uncover additional examples by exploring those initially identified. The authors acknowledge that the search process might have missed a few pertinent examples due to the exclusive use of English keywords.

Guided by the framework proposed by Van Tichelen (2019), key characteristics were set to determine the inclusion/exclusion of examples (see full list in Table 3). The principal investigator gathered a total of 84 industry examples distributed across 11 industries launched between 2014 and 2022. The resulting industries, ranging from tourism, aviation, events, entertainment, luxury fashion, gaming, and toys, emerged inductively during the analysis, based on their alignment with the selection criteria. Despite sectoral differences in purpose and value proposition, all examples shared a focus on enhancing customer experiences through technology-mediated physical interaction. Hence, this interdisciplinary perspective enables comparative insights across domains and contributes to a comprehensive understanding of phygital experiences.

Subsequently, an Excel code sheet was created to record background information, i.e., location, establishment year, and rationale. Employing an abductive approach, additional categories within the coding book were delineated through Study 1 findings and an inductive analysis of the chosen examples, allowing the coding categories to emerge. Five categories were developed that were believed to represent the essential characteristics of phygital experiences. The first category focuses on the types of phygital experiences, which include the four categories suggested by Van Tichelen (2019). As consumer-end industries extend beyond purchasing products/

Table 3 Inclusion and exclusion criteria for the examination of phygital industry examples	Inclusion criteria	Exclusion criteria
	The experience must use one or more technology-driven solutions (e.g., XR, QR codes).	Pre-2013 industry examples, as the term 'phygital' was only established in 2013, and technology has changed drastically in the last decade.
	The experience focuses on consumer engagement- i.e., active participation, involvement, and empowerment.	Experiences that do not incorporate any technological solutions (i.e., purely analog) or are solely digital.
	The experience needs to be personalised- i.e., collect customer preferences to offer tailored information and promotions.	Experiences that do not actively engage customers or lack elements of empowerment.

services and entertainment, the researchers included a fifth type under the name "educational" based on Pine and Gilmore's four realms of experience (2019). See Table 4 for definitions of those categories.

The second set of information pertains to the key features of phygital experiences, developed through an abductive integration of theoretical insights from Study 1 and findings from Study 2 (See Table 5). Initial feature categories were informed by the conceptual themes identified in the literature, including Batat's (2022) Phygital Customer Experience (PH-CX) framework. Subsequently, categories were then refined and expanded based on recurring patterns observed in the content analysis to reflect both theoretically grounded and practice-based dimensions of phygital experiences. The third category regarded the number of user(s) involved, such as "single" or "multiple" users. The fourth category entails involvement to understand if people are actively or passively involved by adapting Zaichkowsky's (1985) involvement construct with "low" (i.e., limited gestures and digital interaction), "medium" (i.e., moderate gestures and digital interaction) and "high" (i.e., extensive gestures and digital interaction) levels. To conclude, the final category addresses the various actions and senses (i.e., visual, touch, audio, move and talking) that users engage in phygital experiences. All data coding and analysis were performed solely by the principal investigator. Intra-rater reliability was assessed by re-coding a stratified random sample comprising 25% of the data. Agreement between the two coding rounds yields 83% (Cohen's $\kappa = 0.62$), indicating substantial agreement (Landis and Koch 1977). Analytical rigour was further ensured through iterative refinement of categories, the maintenance of a comprehensive audit trail, and regular discussions with the co-authors throughout the analysis process (O'Connor and Joffe 2020). If an example belonged to a certain category and/or met specific criteria, it was coded as 1 = offered/available or 0 = not offered/unavailable. The assignment to a certain criterion was not mutually exclusive, but the same example can be categorised into different categories at the same time. Once Studies 1 and 2 were completed, a comparison was conducted between them to provide the foundation for the development of the phygital experience framework. To ensure rigour and efficiency, the researchers followed Müller-Bloch and Kranz's (2015) guidelines for identifying and presenting the gaps between the two studies, comprising four steps: 1) localisation, 2) characterisation, 3) verification and 4) presentation.

Table 4 Definitions of phygital experience categories

Category	Definition	References
Informational	A phygital experience that provides customers with additional information that could enrich their experience.	Van Tichelen (Van Tichelen 2019)
Transactional	A phygital experience that eases and stimulates the customer during the buying process.	Van Tichelen (Van Tichelen 2019)
Entertaining	A phygital experience that entertains customers In an engaging and interactive manner.	Van Tichelen (Van Tichelen 2019)
Supportive	A phygital experience that adds value to the onsite experience by assisting the customers.	Van Tichelen (Van Tichelen 2019)
Educational	A phygital experience that increases the customers' skills and enhances knowledge through active participation.	Pine and Gilmore (Van Tichelen 2019)

Table 5 Definitions of phygital experiences features

Feature	Definition	References
Accessibility	Ensures independent, equitable, and dignified functioning for individuals with diverse access needs (mobility, vision, hearing, cognitive) by providing universally designed products, services, and environments.	Darcy and Dickson (2009)
Adaptability	Ability to react effectively and change the phygital experience to meet consumers' needs.	Pusceddu et al. (2023)
Affectivity	The role emotions play in connecting audiences with brands in a personal way.	Batat (2022)
Gamification	A method of enhancing a service with gameful elements to enhance user value creation.	Huotari and Hamari (2012)
Immediacy	Consumers need to receive content, expertise, and personalised solutions in real-time during their experience.	Parise et al. (2016)
Immersivity	Users' interaction with the real environment in a virtual environment and integration of virtual content with the physical environment.	Batat (2022)
Integrity	Consistency, coherence, stability, permanence, and ethical alignment, emphasising prioritisation of customers security.	Dunn (2009)
Memorability	Ability to recall specific service activities and form a positive or negative attitude toward the service provider associated with those activities.	Pine and Gilmore (2019)
Personalisation	The process that creates a relevant, individualised interaction between two parties is designed to enhance the experience.	Batat (2022)
Practicability	The functional benefits consumers get out of their experiences throughout their journeys both online and offline.	Batat (2022)
Sensoriality	Impressions are formed by specific events whose sensory elements have been carefully crafted by someone for a given receiver.	Velasco and Obrist (2021)
Sociability	Experiences that enhance people's social connections in digital and phygital spheres.	Batat (2022)
Technicality	Employment of user-friendly, intuitive, and reliable technology to ensure a positive customer experience.	Batat (2022)

4 Results

4.1 Literature review findings

Despite first emerging in publications in 2014, the term phygital found traction in 2017. This can be seen in Fig. 3, which presents the distribution of research articles publishing phygital experiences according to the year of publication. The recent increase in phygital experiences research (2021–2024) suggests a growing prominence. This is likely driven by the COVID-19 shift towards digital experiences that still prioritise human interaction and physical aspects.

The identified 57 papers were published in 35 different outlets. As presented in Table 6, there is a marginally higher level of research in retail and marketing, and only 5 tourism and hospitality journals (e.g., Current Issues in Tourism and Tourism Management) have been published in this research area. This scarcity of articles indicates a potential gap in scholarly discourse, highlighting an opportunity for further exploration in this emerging area.
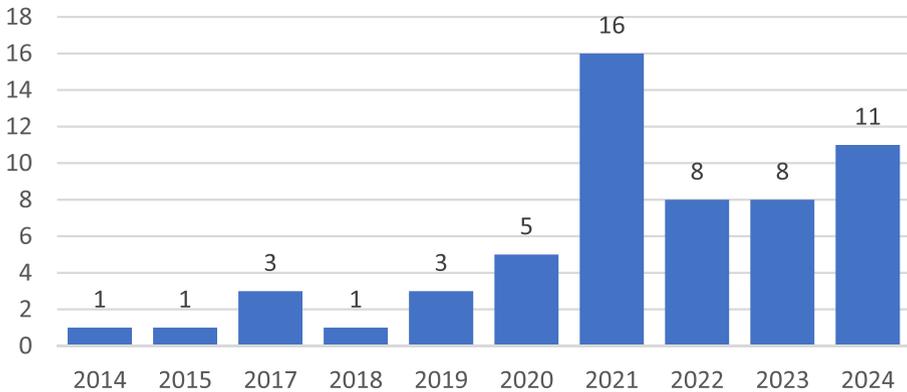
Fig. 3 Phygital articles published over the years

Table 6 Journals publishing articles about phygital experiences

Journal	No. of Studies
Journal of Strategic Marketing	6
Qualitative Market Research	5
Journal of Retail and Consumer Services	4
Sustainability	3
Heritage	2
Others (i.e., journal articles, conference papers and 1 master's thesis)	37
Total	**57**

Among the 57 articles, 14 were conceptual, and 43 were empirical studies dominated by qualitative methods (i.e., 27 articles), followed by 14 quantitative studies and only 2 mixed methods investigations that combined semi-structured interviews with questionnaires. The qualitative studies mainly used in-depth interviews, with only 8 studies adopting a multi-method approach by combining focus groups, interviews, and case studies. Thematic and content analysis were the most adopted approaches for data analysis ($n = 14$), and online surveys were the primary means of quantitative data collection. A range of theoretical frameworks and models were adopted, with the most common being the Flow theory (Csikszentmihalyi 1988), the Technology Acceptance Model (TAM) (Davis 1989) and Stimulus-Organism-Response (S-O-R) model (Mehrabian and Russell 1974). Across the included articles, the customer journey model was adapted to the phygital tourism experience (Neuburger et al. 2018) and the phygital shopping experience (Batat 2022).

4.2 Articles by themes

Thematic Analysis by Braun and Clarke (2012) identified the central issues and advancements in knowledge that are being addressed within the context of phygital experiences in research. The findings revealed that issues discussed by the 57 papers can be clustered into four major themes: 1) defining phygital, 2) customer response

to phygital experiences, 3) digital realm and technological components in phygital experiences, and 4) phygital strategies. The following sections will cover the discussion of each theme.

4.2.1 Theme 1: Defining phygital

Theme 1 focuses on critiquing existing understanding and definitions of phygital and its main characteristics. Echoing Mele et al. (2023), this review recognises phygital research as an emerging field despite its growing impact, and that has been mainly researched in retail and marketing and applied to different contexts, such as space, marketing and customer journey; hence, showing its potential for broader applications across industries. It was noted that some researchers use phygital and hybrid synonymously to describe different ways of blending physical and digital elements (Belghiti et al. 2017; Talukdar and Yu 2021). Other authors assert that while there is some overlap between the two terms, their meanings differ. Mieli (2023) claims that phygital refers specifically to the physical-digital fusion, whereas hybrid indicates a generic mix of two things. Similarly, Piccioni (2023) draws a clear distinction between phygital and hybrid experiences. Phygtial events employ technology to create seamless interactions between people and spaces, enhancing the experience of moving between digital and physical settings. In contrast, hybrid experiences involve the coexistence of physical and digital elements that are not necessarily intertwined. Rather than enhancing or expanding the physical environment, technology in hybrid settings serves as an alternative mode of engagement. Thus, the key difference lies in how the physical and digital components are structured and experienced.

Moreover, previous retail studies had commonly used phygital to define the transition from a multi-channel (i.e., use of multiple channels independently) and cross-channel (i.e., use of multiple channels interconnected) to an omnichannel (i.e., a seamless customer experience across various channels, both online and offline) approach, adopting the terms omnichannel and phygital as synonyms for organisations that incorporate digital technologies in their strategies, for example, a self-service kiosk (Banik 2021; Herrero-Crespo et al. 2022). However, Batat (2021, 2022) argues that phygital and omnichannel are conceptually distinct. Specifically, omnichannel refers to strategies that ensure continuity across online and offline channels throughout the customer journey. Conversely, phygital focuses on delivering immersive, human-centric experiences, forming a whole ecosystem of connected physical places and digital spaces, encompassing multiple sectors beyond retail, such as tourism and hospitality. Therefore, whilst scholars agree that the label phygital refers to intertwining the physical and digital realm, there is still a lack of consensus on its definition and theoretical foundations (Mele et al. 2023).

This review revealed the versatility of phygital experiences in catering to various spatial contexts, as they can exist in indoor and outdoor spaces. Specifically, indoor spaces refer to experiences that take place in an enclosed environment, like shops (Lawry 2021) and museums (Vosinakis et al. 2020). In contrast, only one article (Bazzanella et al. 2014) investigates the opportunities of implementing these solutions in less confined spaces like squares and natural parks, reporting the benefits of a "phygital public space approach" to foster the social networking between citizens.

Articles on this topic also discuss the characteristics of phygital experiences. It should be noted that while not all phygital experiences will have all of the features identified in Table 5, the authors emphasise key features like the human-centric approach (Batat 2022), the high degree of personalisation (Mikheev et al. 2021), and the hedonic-utilitarian mix that focuses on human touch and emotions first (Ferrell et al. 2021). Importantly, phygital experience simultaneously fulfils needs like mental imagery, entertainment, and aesthetics (Banik and Gao 2023) alongside utilitarian needs such as timesaving, immediacy, and practicality (Boudkouss and Djelassi 2021).

Lastly, only 5 studies have discussed the potential risks and challenges associated with phygital solutions, currently hindering widespread adoption in every domain. On this, Veer and Dobele (2021) argue that scholars need to investigate the potential risks of phygital solutions instead of focusing only on the advantages. Overall, challenges and risks identified include economic ones due to the high implementation costs, technology maintenance (Piccioni 2023), and initial scepticism towards technologies due to their novelty and loss of appeal in the long term (Pusceddu et al. 2023).

4.2.2 Theme 2: Customer responses to phygital experiences

This research theme explored customer perceptions of consumers engaging in phygital experiences, documenting five response types: cognitive, behavioural, emotional, social, and sensory.

Cognitive: Previous studies stress that due to the high level of personalisation, phygital experiences facilitate and instil confidence in customers in information-seeking and decision-making, leading to higher satisfaction (Banik and Gao 2023; Liu et al. 2022). Likewise, articles suggest the "educational" attribute. For example, Batat (2021) found that AR phygital dining experiences might encourage customers to try new dishes and enhance awareness of unique service attributes, positively influencing purchasing intentions. Other articles suggest the "practicality" aspect, revealing an increase in individuals' "perceived usefulness" of phygital experiences (Lawry 2021; Herrero-Crespo et al. 2022).

This review found that customers' acceptance towards digital solutions has evolved due to the increased consideration of phygital solutions after COVID-19. Indeed, articles from 2014 to 2019 reported customers' scepticism towards technologies since they were considered cumbersome and impractical (Ferrell et al. 2021). Conversely, Guzzetti et al. (2024) investigated the cognitive and emotional perception in phygital luxury retail and found that participants without prior experience with the technology initially exhibit negative biases. However, hands-on interaction shifted user perception to be more positive, indicating a growing willingness to engage with technology in the future. Likewise, Pusceddu et al. (2023) investigation shows customers perceive phygital solutions in retail stores either as extraordinary (i.e., "passionate" and "explorative") or ordinary (i.e., "hostile", "controversial", and "disappointing") experiences, suggesting that consumers need to get familiar and experiment with new technologies before appreciating them. Such results could better inform practitioners to adjust their offerings and respond promptly to diverse customer reactions.

Behavioural: A less prominent (i.e., 7 articles) but significant sub-theme focused on the "behavioural" customer response to phygital marketing stimuli, like purchasing a product. Notably, luxury retail studies have examined the use of phygital in-store experiences to enhance purchase intentions, neglecting potential drawbacks such as technical glitches and privacy concerns, thus assuming that everyone views the presence of phygital solutions positively (Pusceddu et al. 2023). Some authors found that customers appreciate interactive kiosks' convenience and timesaving benefits (Boudkouss and Djelassi 2021; Guzzetti et al. 2024), while others suggest that phygital increases customer loyalty intentions in luxury retail (Banik 2021; Lawry 2021). Mishra et al. (2021) claim that phygital solutions empower and satisfy consumers, aiding retailers in retention. In tourism, Mieli (2023, 2024) studies introduce the notions of "planned serendipity" and "phygitality" in a tourism behaviour context. These concepts suggest that tourists navigate physical spaces guided by digital smartphone information, creating phygital paths as they move between locations where digital information overlays the physical environment.

Emotional: The third sub-theme revealed was the "emotional" responses. The role of emotions was deemed crucial in this work, maintaining that organisations that implement a phygital approach must offer both functional and emotional benefits (Guzzetti et al. 2024). In heritage, Andrade and Dias (2020) advanced the potential to emotionally enrich visits by incorporating entertainment, information, and social interaction. In parallel, phygital solutions contribute to hedonic gratification, meeting users' needs for pleasure, escapism, and emotional release (Ÿuce et al. 2021. As previously discussed, researchers also reflect on the role of technology in enhancing customer satisfaction, particularly in information-seeking and decision-making processes (Mikheev et al. 2021; Pangarkar et al. 2022).

Social: Phygital experiences, often labelled as highly engaging with a playful interactive element, were found to enhance human connection and foster interaction (Ÿuce et al. 2021) as well as the local community in public spaces (Bazzanella et al. 2014). Such findings contrast with Boudkouss and Djelassi (2021), showing that solutions like self-service kiosks offer the benefit of avoiding interactions with sales staff to evade commercial pressure. Furthermore, previous work suggests that phygital solutions can be employed to foster co-creation (Ballina et al. 2019) or explored for rapport building between customers and front-staff employees in retail (Bonfanti et al. 2023). According to Pangarkar et al. (2022), employees play a significant role by facilitating experiences that produce hedonic and emotional responses for customers. Çiftçi and Çizel's (2024) field experiment revealed that mixed reality (MR) technology enhanced visitors' perceptions of authenticity and overall experience on museum tours. This led to deeper engagement through interactive interpretations and performances by guides, potentially influencing visitors' values and behaviours. Moreover, it suggests that interactive technologies can empower tour guides to deliver more engaging interpretations.

Sensory: Finally, "sensory" is the last notable sub-theme discovered. A common feature identified stresses the need to respond to consumers' growing desire for immersive experiences. Particularly, findings indicate that when participants feel actively involved in the process, this contributes to a more memorable experience (Talukdar and Yu 2021). Similarly, phygital experiences forge opportunities

for designing immersive sensorial encounters, especially in restaurants (Batat 2021) and heritage sites (Lo Turco and Giovannini 2020). Furthermore, multisensorial stimulation (i.e., sight, sound, touch, smell, and taste) through XR technologies can trigger additional sensual stimuli and connect with people emotionally, leading to an increased affective response (Neuburger et al. 2018). This aligns with the idea that integrating physical and digital elements enhances the physicality of the body to expand the overall sensory and embodied engagement (Kearnes 2003). On this, Batat (2024) investigated consumer preferences to replicate sensory dimensions within the metaverse. She found that sight and touch emerged as the most valued senses, while sound and scent elicited mixed reactions. Notably, taste replication faced resistance due to hygiene concerns and the social aspect of culinary experiences. Those articles highlight the importance of selecting suitable sensory elements for phygital experiences.

4.2.3 Theme 3: Digital realm and technological components in phygital experiences

The third theme refers to the technological component of the phygital experiences. Few studies have attempted to explore the most common types of technology solutions adopted in a phygital setting while also proposing new conceptual frameworks. For instance, Nofal et al. (2017) were the first scholars to develop a phygital heritage model with three different categories: 1) "augmented" (e.g., AR apps), 2) "integrated" (e.g., interactive screens), and 3) "actuated" (e.g., shape-changing interfaces). Nonetheless, this model is pre-pandemic and does not encompass the advancement of new technologies. Indeed, Mieli (2022) provides an overview of technology-based solutions that have been increasingly adopted since the pandemic, such as haptic technologies, blockchain and QR codes.

Nonetheless, few studies interrogate the criteria organisations use to adopt or combine these tools, or how these decisions align with broader experiential goals. Among the most comprehensive contributions, Batat and Hammedi (2022) proposed the Extended Reality Framework (ERT), which integrates advanced technologies like 3D visualisation and voice assistants to enhance the social, cognitive, contextual, and sensory dimensions of these experiences.

4.2.4 Theme 4: Phygital strategies

The final theme that emerges from this review refers to phygital strategies. Due to the accelerated digital transformation triggered by COVID-19, scholars recognise the urge to devise effective strategies for the current digital world, leading to the development of phygital strategies that integrate human touch elements and technology interfaces (Muangasame and Tan 2023; Stankov and Gretzel 2020). Despite their growing importance, so far, this theme has received limited scholarly attention (i.e., 8 papers). Some studies have begun to explore how organisations are adopting phygital strategies. Bonfanti et al. (2023) identified two types of strategies in retail stores: 1) intelligent store creation strategy that enables in-store ordering and purchasing, saving time for customers, and 2) in-store experiential immersion strategy, where customers are immersed in unique settings or participate in community-based brand experiences.

In tourism, Greco et al. (2024) examine how Italian cultural startups implement the phygital "formula" to enhance their value propositions and visitor engagement, highlighting the transformative potential of phygital approaches in the sector.

Few studies, however, address how to implement physical experiences. A notable exception is Vosinakis et al. (2020), who outlined three key principles for phygital implementation in heritage: prioritise user engagement and satisfaction in the design process, conduct ongoing analysis during development, and balance accuracy and simplicity in the final implementation. Furthermore, it was observed that co-designing workshops improved the process of crafting interactive experiences and ensured stakeholder satisfaction with the strategy. This emerging sub-theme merits more attention since dynamic interrelations enable practitioners to identify and address issues fostering co-creation and participatory values (Clemente et al. 2024). As Muangasame and Tan (2023) suggest, "grassroots engagement" between tourism stakeholders (e.g., local communities and government) across the whole planning, development, implementation, and management process is pivotal for the success of a phygital strategy. Indeed, these studies highlight a call for a high degree of collaboration and a holistic approach (e.g., Jacob et al. 2023; Mele and Russo-Spena 2021).

4.3 Phygital experience framework

Figure 5 represents a summary and a visual overview of the narrative literature review's insights. As such, the model presents the status quo of the current knowledge base about phygital and will be used as a foundation for Study 2. Specifically, it served as the basis for developing categories for content analysis to study phygital experience examples, which were then compared with Study 1 findings. The following section presents Study 2 findings.

4.4 Phygital industry examination results

4.4.1 Sectors, launch year and purpose

Guided by Fig. 4, Study 2 conducted a content analysis of phygital experiences' examples from different industries to identify trends and gaps between theory and practice. The content analysis identified 84 examples from 11 sectors spanning the years 2014 to 2022. Interestingly, while fewer academic accounts were identified in tourism and hospitality in Study 1, Study 2 revealed a conspicuous number of real-world applications, highlighting a gap between scholarly attention and tourism practices. Moving on, Fig. 5 illustrates the distribution of phygital experiences by their launch year, showing similarities with the year of distribution of the research articles published, as shown in Fig. 3. Notably, luxury fashion emerged as a pioneer in adopting phygital in-store experiences, with brands like Ralph Lauren and Rebecca Minkoff introducing smart-fitting rooms from 2014 onwards.

Echoing themes identified in Study 1, various rationales for developing phygital experiences have been identified, besides general objectives like increasing revenues and enhancing satisfaction. As documented by the literature, the predominant justification for implementation was to provide both tailor-made and sensory-evoking
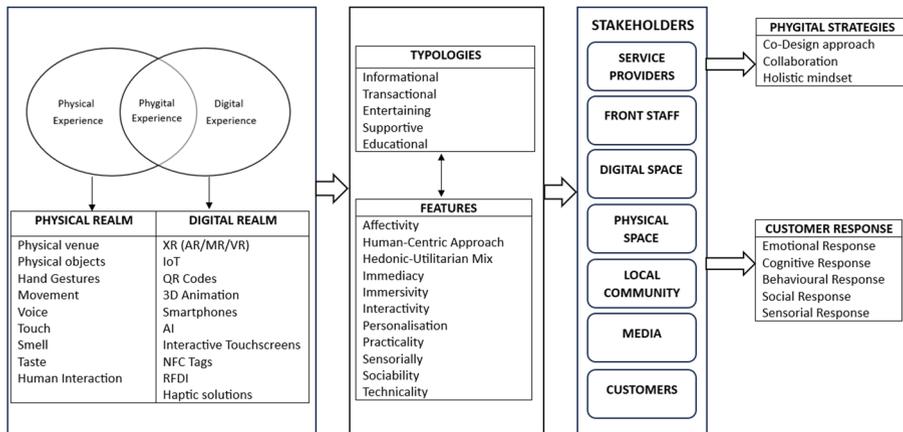
Fig. 4 Summary model of phygital experiences findings from the systematic review (authors' own 2023)
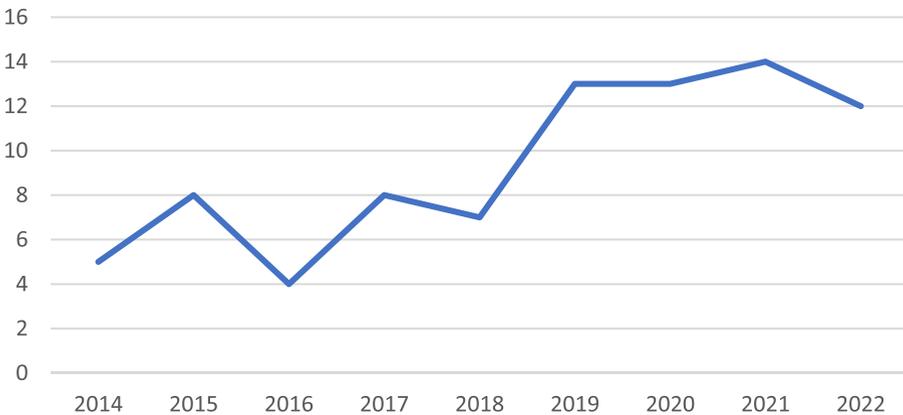

Fig. 5 Distribution of phygital experiences by launch year

immersive experiences by incorporating interactive touchpoints to understand people's preferences in retail settings (Mele et al. 2021) and enhance visitors' engagement in tourism (Mieli et al. 2024). Phygital solutions are recommended for facilitating engagement among front-staff employees and customers, particularly in the pre- and during-experience phases (Bonfanti et al. 2023). An illustrative example of this is the 878 AD Winchester experience, which combines interactive exhibits, including live performances, artefacts, and hands-on activities, with an AR app that guides visitors on a geo-located walking tour through modern Winchester, overlaying digital reconstructions, 3D scenes, and game content onto real-world locations (Visit Hampshire 2025).

In line with Study 1 results, phygital experiences are designed to deliver both utilitarian and hedonic value by following a human-centric approach. However, the content analysis results revealed a more nuanced perspective by highlighting how

different industry case studies prioritise either functional benefit (e.g., convenience and efficiency) over hedonic outcomes (e.g., emotional engagement) (Guzzetti et al. 2024). Specifically, it was observed that tourism, entertainment and events phygital experiences are more oriented towards hedonic advantages, such as immersion, emotional resonance, and meaningful interactions, as a means of enriching the overall visitor experience (Lo Turco and Giovannini 2020). Conversely, in the beauty and clothes sector, the focus was on reducing product returns through virtual try-on technologies. Similar utilitarian innovations aimed at saving time and improving efficiency, aligning with the themes that emerged in Study 1 (Boudkouss and Djelassi 2021). This tendency has been noticed in retail, hospitality (accommodation) and aviation, exemplified by the Biometric Boarding Technology implemented by Delta Airways in US airports. Therefore, these examples illustrate how certain phygital applications lean towards prioritising functionality over hedonic attributes, reflecting diverse strategic priorities across sectors.

Moreover, the content analysis offers further insights into the purposes behind investing in phygital solutions, revealing other practical rationales that have been scantly addressed or overlooked in existing academic literature. Notably, industry results showed that few organisations, particularly in tourism and cultural heritage, are beginning to leverage phygital to enhance physical and content accessibility. For instance, the Smartify AR app solutions for art galleries enable visitors to scan artworks using their smartphones, unlocking access to audio guides, curatorial narratives, and multilingual content (Scarles et al. 2020). Additionally, it was found that phygital is employed in marketing for short-term interactive campaigns, like KLM Airlines' "High Five" initiative. This campaign used digital screens in New York and Amsterdam to encourage people to interact and attempt the "perfect" high-five through the screens to win free return tickets (Sluis 2014). Overall, these examples showcase the diverse and innovative applications of phygital experiences, indicating opportunities for future research and significant untapped potential for improving accessibility and engagement for tourism professionals.

4.4.2 Types and features of phygital experiences

Building on the findings of Study 1, Fig. 6 presents an overview of the different types of phygital experiences and how they have been combined, stressing the innovation potential by being creative in terms of how to combine experience types (Van Tichelen 2019). Doing so allows for a further refinement of Table 5 by identifying key types consistent with Van Tichelen (2019), while also introducing a fifth typology, namely educational. This category is exemplified by "Wake the Tiger", an immersive attraction in Bristol employing art installations and interactive multisensory technologies to engage visitors to reflect on climate change, consumption and collective responsibility (Visit Bristol 2025). Such cases demonstrate that educational phygital experiences extend beyond the provision of information, instead fostering active learning and awareness that align with tourism's broader objectives of sustainability and cultural understanding. Notably, it was observed that in-store retail experiences lean heavily towards the "informational," "transactional," and "supportive" types. This focus on the functional aspect aligns with the primary goals of these experiences:

- Entertaining
- Informational Transactional Supportive
- Entertaining Educational
- Supportive
- Informational Entertaining Supportive Educational
- Informational Transactional Entertaining
- Transactional
- Informational Entertaining Educational
- Entertaining Supportive Educational
- Entertaining Supportive
- Informational Supportive
- Informational Supportive Educational
- Informational Educational
- Transactional Supportive
- Informational Entertaining Supportive
- Informational Transactional Supportive Educational
- Informational Transcational Entertaining Educational

Fig. 6 Types and adoption frequency of phygital experiences

facilitating product information retrieval, efficient transactions, and customer support. Conversely, tourism initiatives primarily fall under the mix of "entertainment" and "educational" to ensure a more memorable and enjoyable visit. Furthermore, it shows that simpler experiences (i.e., comprising no more than two categories) are more prevalent compared to the most complex ones (i.e., comprising all three types of experiences), raising questions about the potential for more complex integrations.

Additional features emerging from Study 2 include: "accessibility", "adaptability", "integrity", "memorability", and "gamification". Interestingly, while the identified phygital experiences present a wide range of features, not all examples encompass every identified feature. However, certain attributes are more prevalent, such as "interactivity" and "immersivity," alongside other commonly observed aspects like "technicality," "practicality," "memorability," and "integrity". In accordance with Study 1, all examined case studies aim to provide multisensory elements, primarily utilising *sight, touch,* and *hearing*, while *smell* and *taste* are less frequently addressed. Indeed, hospitality food and beverage case studies, like the Le Petit Chef, were the only ones to successfully incorporate all five senses, showcasing the potential to deliver a comprehensive sensory experience (Batat 2021).

Expanding on the phygital typologies highlighted in the narrative review, a distinct combination of features was noticed based on the primary goal of the phygital experience. Features such as "sociability", "affectivity", and "gamification" were prevalent in "entertaining" and "educational" experiences. Conversely, experiences classified as "informational", "transactional", and "supportive" (e.g., retail and air transportation) tend to emphasise practicality over the hedonic aspect. Thus, tourism practitioners can strategically leverage specific features according to their goals, rec-

ognising the potential benefits of both functional and hedonic elements for successful experiences. Finally, "accessibility" appeared to be the least prominent feature, indicating that despite the potential of technology to provide more inclusive experiences, organisations still face barriers to achieving broad accessibility. As such, Study 2 analysis results provide deeper insights into how phygital strategies are implemented in practice, offering a more granular understanding that extends the conceptual findings explored in the narrative systematic review.

4.4.3 User(s) number, actions, and involvement level

Our analysis reveals a spectrum of user interaction within phygital spaces, influenced by the context, design, and technology. Four distinct scenarios emerge based on the number of users and space, with visuals assigned to each quadrant for illustration (Fig. 7). In the *"single user in a private space"*, one individual engages solo with phygital solutions in a private space, as seen by the Faroe Islands Tourism Board, which launched a virtual travel tool called Remote Tourism, enabling prospective visitors to control a local guide via a live video stream from remote (Leotta 2021). Conversely, in the *"single user in a shared space"*, one person engages with phygital solutions while sharing the space with other individuals not using similar solutions. For example, the Smart Tourism Information System in Seoul, South Korea. The *"group users in a private space"* refers to experiences where two or more people in a

Fig. 7 Interaction scenarios matrix in phygital spaces (author's own 2023; Visit Faroe Islands 2020)

private group individually engage with phygital solutions in the same physical space, like the "Casa Battló AR Tablet Tour" in Barcelona (Casa Batlló 2021). Finally, the *"group users in a shared space"* refers to a collective interaction with the phygital technology, such as Frameless Immersive Experience (Har-Even 2024).

Figure 8 visually maps the range and frequency of consumer-action combinations in phygital experiences offered by the industry, highlighting the sensory modalities involved in each interaction. Each bubble represents a distinct combination of sensory inputs, such as visual, touch, audio, movement, and speech, with the bubble size corresponding to the frequency of occurrence. The diagram clearly shows that all consumer actions involve a visual component, reaffirming its foundational role in phygital design. The most frequent and prominent combinations—Visual-Audio-Touch-Move, Visual-Audio-Touch, and Visual-Touch-Move occupy the top-left quadrant with the largest bubbles, indicating their dominance in practice. These findings suggest that immersive phygital experiences commonly rely on multiple simultaneous sensory inputs to heighten user engagement. Furthermore, as the number of sensory modalities increases, so does the level of involvement, aligning with Zaichkowsky's (1985) assertion that higher content richness enhances consumer engagement. Combinations involving four or more modalities are positioned higher on the Y-axis, signifying deeper and more active interaction. Conversely, single- or dual-modality actions appear lower and to the right, typically associated with lower levels of engagement.

4.5 Theoretical gaps and gaps between academia and industry

It is not surprising that, given the relative infancy of research into the field of phygital, there is a significant number of research gaps, showing a need and opportunity
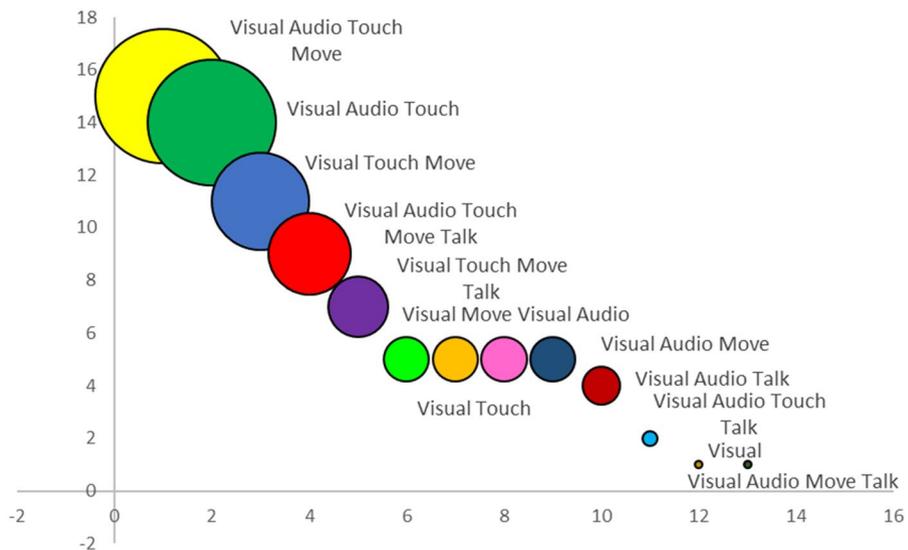

Fig. 8 Consumer actions and senses in phygital experiences

for future research endeavours. Following Müller-Bloch and Kranz's (2015) framework, five research gaps were identified: contradictory evidence, knowledge void, action-knowledge conflict, methodological conflict, and evaluation void (See Table 7). It is important to acknowledge that phygital tourism experiences are inherently dynamic, continuously evolving in response to advancing technologies, shifting consumer expectations, and broader societal transformations. However, the current body of research predominantly offers cross-sectional insights, highlighting a critical need for future longitudinal studies to capture how phygital experiences develop and evolve over time. Moreover, Study 2 revealed that there is a general need to expand the discussion on the opportunities to adopt phygital experiences to increase accessibility and handle customers' ethical and data privacy concerns.

As observed across Studies 1 and 2, numerous investigations and practical examples come from luxury and/or well-established brands from various sectors. Nevertheless, experiences in non-luxury contexts deserve higher consideration to explore implications in less advanced technology contexts and small and medium-sized organisations, especially considering decreasing technology costs and evolving customer expectations post-COVID (Clemente et al. 2024). To no surprise, a vast majority of the examples and studies tend to predominately concentrate on Millennials and Generation Z, with a marginal number of practical examples for children (e.g., Kinder AR toys), denoting a gap in exploring the perspectives of older generations, like Generation X and Silver Traveller, who represent large and lucrative target groups as these experiences might be implemented to combat loneliness (Scarles et al. 2020). Further

Table 7 List of identified academia-industry gaps

Type of research gap	Definition Müller-Bloch and Kranz (2015)	List of identified academia-industry gaps
Contra-dictory evidence	Studies' results are contradictory when analysed from a more abstract point of view.	Sociability vs avoidance interaction in phygital experiences. Technology acceptance and perception of phygital experiences. Risks, and challenges of phygital experiences.
Knowl-edge void	Desired research findings do not exist.	Implementation of phygital experiences strategies for small and medium scale suppliers. Insufficient research on the features that distinguish a phygital strategy from an entirely physical and entirely digital strategy. Role of local communities/residents in phygital tourism experiences. Front staff and operational employees' perspectives. Privacy and security (regulation) of phygital experiences.
Method-ological conflict	A variation of research methods is necessary to generate new insights or to avoid distorted findings.	Scarcity of mixed methods studies. Scarcity of longitudinal studies to assess long-term trends and evolutionary patters. No use of scenario-based experiments.
Action-knowledge conflict	Professional behaviour or practices deviate from research findings or are not covered by research.	Population gap and lack of research for specific target markets. Implementation of phygital experiences in non-luxury contexts. Inclusivity and accessibility. Implementation of phygital experience in the post-experience stage. Strategies for organisations to choose appropriate tech solutions for phygital initiatives

research is necessary to design phygital tourist experiences for diverse age groups and travel personas (e.g., digital nomads). Another shared gap between academia and practice lies in the scant attention paid to designing phygital solutions for the post-experience phase, which has great potential to influence perceptions and behaviours and enhance revisit intentions (Zheng et al. 2024). Finally, it was observed that all the identified marketing campaigns are short-term oriented, meaning there is an opportunity for future research in exploring the impact of medium and long-term phygital marketing initiatives (e.g., positioning a tourism destination as the most advanced in terms of providing phygital experiences).

5 A new theoretical framework for phygital experiences

Informed by the findings of studies 1 (see Fig. 4) and 2 and the identified academia-industry gaps, this study contributes to the literature on phygital experiences by proposing a new conceptual framework. This framework comprehensively integrates the key aspects of phygital experiences, aiming to enhance the understanding by suggesting a holistic design framework and presenting three main elements destinations, but also other service suppliers should consider: 1) phygital design components; 2) types and features; and 3) strategic elements and stakeholders' engagement. As presented in Fig. 9, the top section of the model outlines the various elements for crafting phygital experiences. Drawing on Milgram and Kishino's (1994) reality-virtuality continuum, we argue that there are different "ratios" of physical and digital experiences based on technology type and integration levels. The continuum ranges from high physical-low digital to high digital-low physical, with a midpoint illustrating a balanced mix of both. Furthermore, it extends Mieli's (2022) and Batat and Hammedi's (2022) models by listing the different components of the physical and digital realms and showing how people interact in a phygital context depending on the users' number and spatial context.

    In line with Van Tichelen's (2019) and Pine and Gilmore's (2019) work, the study confirms that phygital experiences can be categorised into different types, ranging from informational, transactional, entertainment, supporting and educational. Drawing from the literature, a plethora of features have been identified. Attempts to classify those features and to describe phygital experiences accurately enable us to identify an experience's position on the proposed continuum to facilitate the design and implementation and maximise the benefits of immersive phygital experiences (Flavián et al. 2019). It is essential to note that not all experiences may encompass every identified feature, but a selection according to the rationale, context and target audience. In summary, the framework serves as a guideline for delineating phygital experience characteristics, providing actionable insights for empowering existing experiences and designing future ones. Lastly, the study advanced that in a culture of co-design, collaboration and holistic understanding, stakeholders, for example, service providers, the local community and academics, come together to achieve the listed customer responses (Muangasame and Tan 2023). Crucially, the proposed framework does not adhere strictly to a linear, staged model. Rather, it delineates distinct conceptual components dynamically interacting with one another. This dynamic interplay culminates
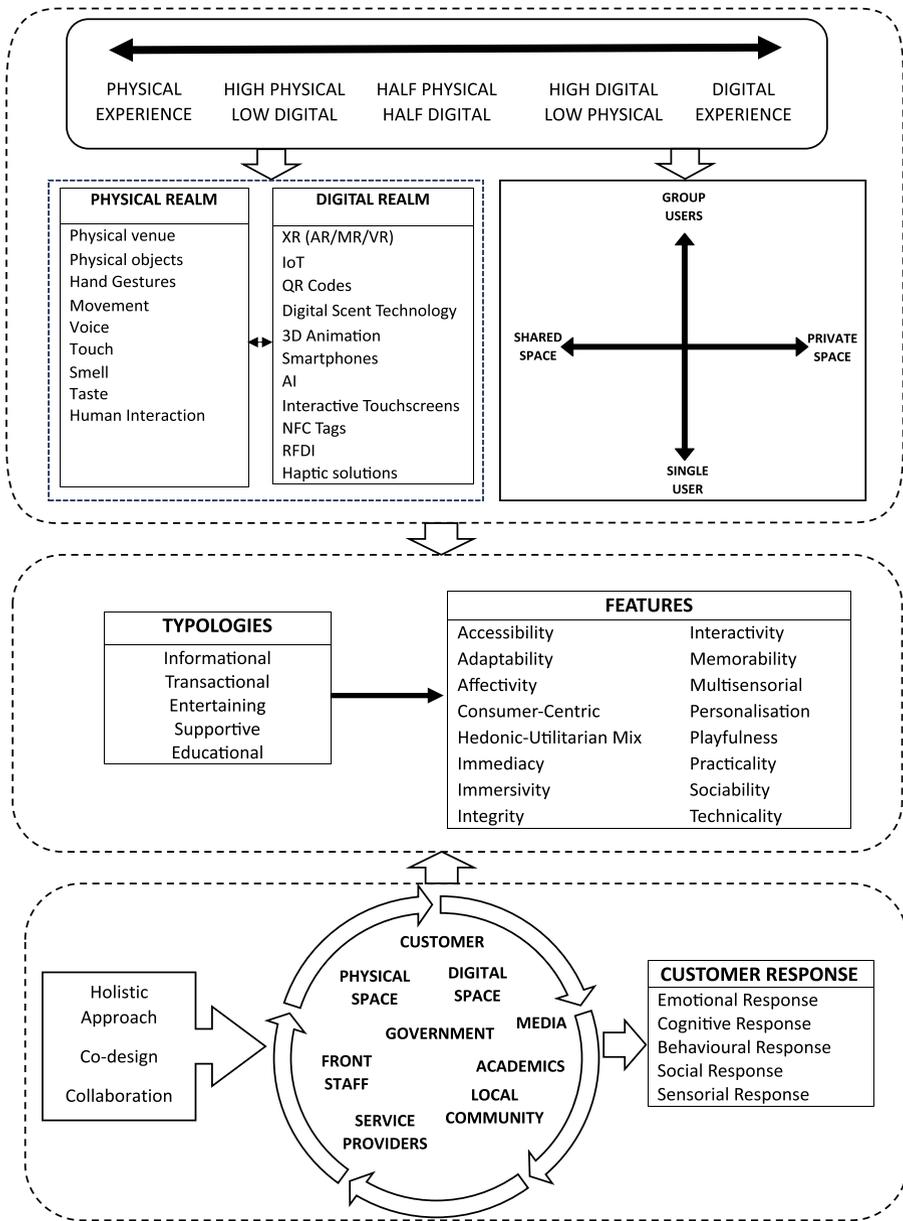
PHYSICAL EXPERIENCE — HIGH PHYSICAL LOW DIGITAL — HALF PHYSICAL HALF DIGITAL — HIGH DIGITAL LOW PHYSICAL — DIGITAL EXPERIENCE

PHYSICAL REALM
Physical venue
Physical objects
Hand Gestures
Movement
Voice
Touch
Smell
Taste
Human Interaction

DIGITAL REALM
XR (AR/MR/VR)
IoT
QR Codes
Digital Scent Technology
3D Animation
Smartphones
AI
Interactive Touchscreens
NFC Tags
RFDI
Haptic solutions

GROUP USERS

SHARED SPACE — PRIVATE SPACE

SINGLE USER

TYPOLOGIES
Informational
Transactional
Entertaining
Supportive
Educational

FEATURES

Accessibility	Interactivity
Adaptability	Memorability
Affectivity	Multisensorial
Consumer-Centric	Personalisation
Hedonic-Utilitarian Mix	Playfulness
Immediacy	Practicality
Immersivity	Sociability
Integrity	Technicality

Holistic Approach
Co-design
Collaboration

CUSTOMER
PHYSICAL SPACE   DIGITAL SPACE
GOVERNMENT   MEDIA
FRONT STAFF   ACADEMICS
LOCAL COMMUNITY
SERVICE PROVIDERS

CUSTOMER RESPONSE
Emotional Response
Cognitive Response
Behavioural Response
Social Response
Sensorial Response

Fig. 9 Integrated conceptual framework of phygital tourism experiences (authors' own, 2023)

in an experiential synthesis, ideally curated through a collaborative stakeholder co-design approach (Clemente et al. 2024).

6 Conclusions, limitations and future research

This paper introduces a comprehensive conceptual framework of phygital experiences in the tourism industry. The framework is informed by a narrative systematic review of 57 academic articles and a content analysis of 84 practical-phygital examples across 11 sectors. The review identified four major themes: defining phygital, customer response, technological components in phygital experiences and phygital strategies, which informed a summary model used to guide the categorisation of phygital experiences examples. Subsequently, the analysis of industry examples provides a practical-oriented lens on how phygital experiences are currently designed and implemented. By bringing these perspectives, the study reveals gaps between academic research and industry practices, while extending recent conceptualisations of phygital experiences (Batat 2022).

This research makes three key theoretical contributions. Firstly, distinct from previous systematic literature reviews that primarily consolidate existing knowledge (Del Vecchio et al. 2023; Mele et al. 2023), this study adopts an interdisciplinary approach to critically assess the theoretical foundations and advance the discourse around phygital. In doing so, it contributes to the growing body of research examining the trend of phygitalisation in tourism and hospitality (Chen et al. 2025; Stankov et al. 2025). Addressing the call of Chen et al. (2025), this study is among the first to combine theoretical and practice-based insights to clarify how phygital experiences operate in tourism. Furthermore, it extends the work of Stankov et al. (2025) by moving beyond their AI-focused perspective to propose a holistic, integrated framework for phygital tourism experiences that encompasses a wider spectrum of technologies, user interactions and strategic stakeholder engagement. Grounded in the reality-virtuality continuum (Milgram and Kishino 1994), the framework advances a novel ratio-based structure of physical and digital experiences based on technology type and integration levels, thereby providing a more nuanced and refined academic conceptualisation of the phygital construct. Building on the emerging stream of research that distinguishes phygital from hybrid, omnichannel or purely digital (see Batat 2022; Mieli 2023; Piccioni 2023), this study reinforces and extends this conceptualisation by emphasising phygital as a distinct experiential form characterised by the seamless integration of sensory, spatial, and technological elements that place visitors at the centre of real-world experiences.

Secondly, this study enriches theoretical understanding by elucidating the mechanisms underpinning user interaction within phygital tourism spaces. By advancing a novel spectrum of physical–digital user interaction, the framework illustrates how the convergence of physical and digital elements, mediated by users' number and spatial context, creates a dynamic range of experiences. This introduces a fresh perspective on the evolving human-technology interplay within tourism contexts (Corrigan-Kavanagh et al. 2023). Lastly, this study lays the groundwork for future empirical and interdisciplinary inquiry by identifying key areas where additional investigation

is needed. Notably, future research should prioritise mixed-method approaches to explore factors influencing both positive and negative aspects of engagement and satisfaction in phygital experiences. Additionally, research examining phygital experiences for small and medium-sized organisations, accessibility considerations, and framing for different demographics is valuable. Exploring the role of operational staff, the medium- and long-term impact of phygital marketing campaigns, and the post-experience stage also offers promising avenues for future inquiry.

Managerially, this study provides actionable insights for tourism practitioners seeking to design and implement phygital experiences that are both emotionally resonant and technologically innovative. Informed by theoretical critique and empirical insights, the proposed framework serves as a practical roadmap for tourism managers, structuring the design process around three interrelated dimensions: phygital design components, types and features, and strategic elements and stakeholders' engagement. This systematic approach supports informed decision-making and maximises the benefits of immersive phygital experiences. Thus, the framework can assist practitioners in defining the experience type(s), selecting context-appropriate features, and identifying suitable and affordable technological solutions to achieve specific objectives, which will naturally vary according to the organisation's goals, resources, and strategic priorities.

As such, the proposed guiding principles are adaptable across various tourism and hospitality sub-sectors to accommodate priorities and sectoral goals. For instance, within cultural heritage, it could inform the design of educational and entertainment-driven experiences developed collaboratively with local communities and academic partners. In the context of destination management organisations (DMOs), the framework may be leveraged to develop experiential marketing initiatives that seamlessly integrate physical and digital touchpoints, considering user group dynamics and shared/private space dimensions to enhance visitor engagement. In the hospitality sector, the framework could guide the creation of guest experiences that merge physical service delivery with digital enhancement, for instance, through personalised mobile interactions, augmented storytelling, or wellbeing-oriented design, enabling organisations to strengthen emotional connection, service quality, and brand differentiation.

Finally, findings underscore the urge for interdisciplinary collaboration to deepen our understanding and produce research-industry outputs and actions for diverse tourism stakeholders (Clemente et al. 2024). As such, this research contributes to facilitating practitioners' learning from multiple sectors by illustrating the key components and guidelines for crafting phygital experiences. Such collaboration may be operationalised through workshops involving multidisciplinary teams, complemented by tools such as service blueprints and prototyping sessions.

There are several limitations to this research. The emerging and fragmented literature on phygital tourism, alongside the rapidly evolving industry practices, hinders the ability to trace the dynamic and evolving dimensions of phygtial, including technological advancements and shifting tourist expectations. Future longitudinal research is required to examine how phygital experiences emerge, evolve, mature, and potentially fade, providing deeper insights into their evolutionary patterns over time. Moreover, this review deliberately focuses on publications that explicitly employ the

term phygital, recognising that related studies using terms such as "hybrid," "mixed," or "technology-mediated" experiences address overlapping but distinct phenomena. Future research could extend this work through a broader systematic review comparing definitions and theoretical foundations to explore overlaps, distinctions and conceptual ambiguity to provide a further integrated understanding of the phygital concept. Finally, the available literature was disproportionately concentrated on customer responses, which constrained the depth of analysis for other themes, particularly those concerning technological components and strategic dimensions. Therefore, further research should be undertaken to strengthen these underdeveloped areas and offer a more comprehensive understanding of the field.

Data availability No datasets were generated or analysed during the current study.

Declaration

Competing interests The authors declare no competing interests.

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